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Factors Influencing the Interaction Between the Public and Government Authorities in Moscow's Transport Sector: Assessment of Public Opinion

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ABSTRACT

The aim of this study was to justify the factors influencing the interaction between government authorities and the public in the field of urban transport within the framework of the "Strategy for the Development of the Transport System of Moscow and the Moscow Region until 2035." To achieve this, it was necessary to address tasks such as assessing the current level of such interaction and identifying priority tools for its implementation. The article presents an analysis of the dynamics of passenger traffic in Moscow's urban transport and shows its structure (by mode of transport). A classification of factors is proposed based on the following criteria: financial; accessibility, comfort, and convenience; digitalization; travel speed; transport safety; social and environmental factors; level of infrastructure development; and organizational and regulatory factors. The study employed both general scientific methods — analysis, synthesis, comparison — and applied research methods, including public surveys and statistical processing through correlation analysis. Based on sociological surveys of the megacity's residents on the topic of transport sector development, the study identified priority tasks and directions for its improvement. The results allow for the justification of development scenarios for the urban agglomeration's transport system, taking into account public opinion. These data can be used to improve the monitoring system for both urban management and municipal governance.

Keywords: transport sector; Moscow metropolis; population; government authorities; interaction; factors; sociological surveys; public opinion

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INTRODUCTION

Transportation plays a vital role in the development of any metropolis and significantly influences the sustainable development of human potential [1, 2]. The formation and modernization of the transport sector can be regarded as a category of the economic space within the realm of social and economic processes [3].

In the article by H. Sivilevičius and V. Žuraulis, the challenges of modeling the impact of interaction factors among elements of the transport system on the population's quality of life are discussed using a multi-criteria decision-making method. The authors analyze both a model of interaction between government authorities and the population, which enables identification and study of its levels, and the factors (criteria) that affect the improvement of quality of life [4]. The most significant among these are the development level and quality of transport infrastructure; reduction of road traffic accidents; and decrease in environmental pollution caused by transport operations. At the same time, it was found that an increase in the number of vehicles and changes in their technical specifications have little impact on the quality of life issue.

The work of E.A. Deinega and L.A. Plotitsyna outlines the stages of forming a unified socio-economic space in urban agglomerations as part of Russia's spatial development strategy [5]. E.E. Goryachenko argues for the necessity of addressing social issues within the framework of a metropolis [6]. Several publications analyze the choice of modeling approaches for managing urban agglomerations with a focus on the development of the transport system [6–10].

Under these circumstances, the development of a communication mechanism and a model of interaction between the population and government authorities aimed at the development of the metropolis's transport system — taking into account the interests and needs of stakeholders (including at the municipal level)—is of significant scientific and practical importance. For example, it is worth noting that increasing residents' satisfaction with transport services has been highlighted both as a key objective and as an indicator for evaluating the effectiveness of the implementation of the "Transport System Development Strategy of Moscow and the Moscow Region until 2035,[1]" which was approved on December 1. 2021.

In a previous study. the author of this article analyzed methodological approaches to assessing the effectiveness of communications between the Moscow Department of Transport and Road Infrastructure Development and the population in the implementation of strategic projects. The level of informational transparency and accessibility of information about the city's transport system development for citizens was used as a key evaluation criterion [11].

Spanish researchers. examining the conduct of informational communication campaigns in their country related to transport sector development, demonstrated that the transition to a sustainable mobility model encourages greater use of light modes of transport and, consequently, increases the number of vulnerable road users, especially in urban areas. In 2023, this user group — which includes pedestrians, cyclists, personal vehicle users, and motorcyclists — accounted for 46% of road traffic accident fatalities. To reduce this figure, the use of new forms of micromobility information campaigns has been proposed [12].

Reference [13] considers some legal, organizational, and socio-economic aspects of improving the efficiency of local government authorities, including in the area of urban transport development, Interaction between the population and government authorities in this area is a multifaceted process influenced by various factors. The identification of these factors is facilitated by models that justify the most effective decision-making forms at different levels of transport management.

[1] Transport System Development Strategy of Moscow and the Moscow Region until 2035 URL: https://mintrans.gov.ru/documents/7/11694

It should be noted that the interaction between government authorities and the residents of the capital in this area is two-way, since policies and standards for urban transport management must be based on the real needs and capabilities of the population.

Table 1 shows the dynamics of passenger turnover by mode of urban transport in Moscow for the years 2020–2024, while *Table 2* presents its structure.

The data in *Table 2* show that the largest share of passenger transportation in the Moscow metropolitan area is accounted for by the metro and MCC (49.3%), as well as surface urban passenger transport (29.8%).

There are various forms of interaction between government authorities and the population in the transport sector — studying and analyzing these is essential to identify the factors influencing these processes. Modern forms of interaction include the following directions:

1. Information and communication, namely providing the population with information about the history, operation and development of Moscow's transport sector. This information is published on official websites as well as shared through social media channels.

2. Collecting feedback from passengers, which helps determine the topics of greatest interest to them.

3. Survey-based communication methods between the population and the city authorities. It is necessary for monitoring residents' opinions on the transport sector.

4. Development of information platforms for informing and interacting with the population. At the current stage digital solutions are being implemented for this purpose, for example, transport-sharing platforms (carsharing. kicksharing). such as Moscow Carsharing (https://transport.mos.ru/carsharing).

5. Citizen participation in decision-making processes within the transport sector, including public hearings on pressing issues of its development.

6. Involvement of the population in the development of the transport sector and solving its problems.

7. Implementation of partnership programs between government authorities and educational institutions in the transport sector.

8. Implementation of partnership programs between government authorities and businesses in the transport sector.

The analysis of the materials on the research topic allows us to draw the following conclusions:

- The implementation of effective forms of interaction between the population and government authorities is one of the priorities of the "Strategy for the Development of the Transport System of Moscow and the Moscow Region until 2035."
- The development of a system for monitoring this interaction is necessary to ensure a decent quality of life for city residents.
- Effective interaction between the population and government authorities requires studying various factors as well as substantiating the importance of each in the development of interaction models.

FACTORS AFFECTING THE INTERACTION BETWEEN GOVERNMENT AUTHORITIES AND THE POPULATION IN THE TRANSPORT SECTOR

To justify the effectiveness of interaction between the population and government authorities in the development of the urban transport system, it is necessary to identify the influencing factors, which can be classified as follows: financial; accessibility, comfort, and convenience; digitalization; travel speed; transport safety; social and environmental factors; infrastructure development level; organizational and regulatory-legal factors.

These issues are at the forefront of scientific interest for foreign researchers, including Australian scholar P. Ziaesaeidi. His approach to the problem of urban transport development and preserva-

Table 1

Passenger Traffic of Moscow Urban Transport by Mode of Transport

Indicator / Year	2020	2021	2022	2023	2024	2024 к 2020 / 2024 to 2020
Annual passenger traffic. total. billion trips	3.2	3.9	4.1	4.5	4.8	1.5 times
Including:						
Metro. MCC (Moscow Central Circle). billion trips	1.6	2.0	2.1	2.3	2.4	1.5 times
MCD (Moscow Central Diameters). million trips	137	171	182	257	419	3.1 times
Surface urban passenger transport. billion trips	1.0	1.1	1.1	1.2	1.3	1.3 times
Taxi. million trips	390	555	584	621	632	1.6 times
Carsharing. million trips	56	64	67	72	75	1.3 times

Source: compiled by the author based on data from the Unified Transport Portal of Moscow. URL: https://transport.mos.ru/

Table 2

Structure of Passenger Traffic in Moscow Urban Transport by Mode, January 2025

Indicator	Share of passenger traffic by this type of transport, %
Passenger traffic on Metro and MCC	49.3
Passenger traffic on MCD	9.3
Surface urban passenger transport	29.8
Taxi	10.3
Carsharing	1.3
Total:	100.0

Source: compiled by the author based on data from the Unified Transport Portal of Moscow.

tion of green spaces (which have not only ecological but also social significance) promotes the strengthening of social resilience and citizen cohesion through the development of ecologically and socially oriented transport-communication public spaces that meet the needs of the population [14]. In this regard, Russian specialists S.V. Bogachev and N.I. Malis substantiate proposals to expand the authority of local self-government bodies in the environmental sector [15]. The preservation of urban green spaces within the framework of city transport system development is important for reducing environmental pollution, preserving the climate, and ensuring ecological well-being [16].

The publication by S.E. Avram, L. Tudoran and others [17] presents an analysis of the impact of urban transport on noise levels and particulate pollution. It shows that noise pollution and emissions of harmful substances (particulate dust and gaseous combustion products) into the atmosphere depend on the intensity of motor vehicle traffic. For example, in the Cluj-Napoca area (Romania), where this indicator is high, the noise level reached approximately 77 dB due to heavy traffic (214 vehicles/10 minutes) including cars, buses, and trucks. This must be taken into account when developing transport system measures with consideration of the interaction between government authorities and the population.

Let us examine in more detail the factors influencing this interaction by dividing them into groups:

The first group consists of *financial (economic) factors*. These include indicators such as fare cost; availability of discounts or concessions for citizens; associated expenses such as baggage fees, parking charges, etc.; and the cost of owning private transport (if used), including taxes, maintenance, repairs, insurance, depreciation, fuel, and so on. Financial factors influence transport pricing policies, particularly the "fairness" of tariffs for services provided by the transport sector from the population's perspective.

The second group includes *factors of accessibility, comfort, and convenience*. These cover aspects such as the functionality and convenience of routes (number of transfers, proximity of stops), accessibility for passengers with disabilities, availability of infrastructure for private transport use (parking lots, fuel stations, electric vehicle charging points), and comfort (seat comfort, availability of internet, restrooms, etc.). These factors address issues related to the mobility of people with limited movement abilities, the comfort standards of public transport, and accessibility of infrastructure for private vehicles.

A key subject of interaction between government authorities and the population in urban management is road safety, including systems to prevent collisions between vehicles and pedestrians [18].

One of the important parameters of urban transport from the passenger's perspective is the time spent traveling [19], especially when assessing the effectiveness of implemented digital management systems (intelligent transport systems). Their use in several countries (including China, Russia, and others) now allows for accurate prediction of trip duration, which is crucial for traffic management and improving urban transport mobility.

The third group of factors includes the *level of digitalization*, which is reflected in the use of mobile apps for route planning, online notifications about changes in transport operations, and interactive maps showing vehicle movement.

The next group covers *factors related to travel speed* — namely, total travel time, adherence to schedules, and waiting time for transport.

The fifth group concerns *transport safety* — including vehicle reliability (technical condition), the skill level of industry workers, and the level of crime.

Environmental factors form a separate group, including the ecological friendliness of the transport used, its impact on the environment, and sustainable development. In the context of achieving carbon neutrality for the metropolis and low-carbon urban economic development, this group may also include indicators related to greenhouse gas emissions from vehicles and the use of electric transport [20].

A distinct group of factors characterizes the *level of infrastructure development*. This includes the presence and quality of transport infrastructure (roads, bypasses) and related infrastructure (cafes, stops, ticket offices), as well as the prioritization of public transport over private vehicles.

The next group can be called *social factors*. This group includes recommendations from acquaintances (reference persons), personal experience, and the prestige of using public transport.

Organizational factors include the openness and accessibility of information for making decisions on transport or route choice; setting strategic development goals for the sector considering population needs; and ensuring government control and supervision in this area.

In turn, *the regulatory and legal factors* influencing the sector are represented by the *following standards*: transport safety; quality of service delivery; competence of industry personnel; technical regulations governing the condition of vehicles and transport infrastructure; as well as environmental regulations applicable to the city's transport sector.

RESEARCH METHODOLOGY

To assess the level of influence of the factors listed above, a sociological survey of Moscow residents was conducted in February–March 2025. The sample size was 480 people. Respondents were selected based on the following criteria: residing in Moscow and using city or private transport at least 2–3 times per month. To obtain representative data, a generational approach was applied, with age quotas established as follows: 14–25 years — 120 respondents; 26–41 years — 120 respondents; 42–58 years — 120 respondents; 59–81 years — 120 respondents. This approach allowed consideration of the characteristics of all age groups and balanced the sample population. The characteristics of respondents from different generations, based on the principles of the generational theory by N. Howe and W. Strauss, are presented in *Table 3*.

When developing a model for the interaction between the population and authorities aimed at improving the transport system, it is important to consider that the challenges related to the devel-

Table 3

Characteristics of Survey Respondents on the Development of the City's Transport System by Generation Theory

Generational Theory	Year of Birth	Age in 2025. years	Brief Description
Silent Generation	1925–1944	81–100	Characterized by conservatism and restraint. shaped by growing up during economic hardships and wartime.
Baby Boomers	1944–1967	58–81	Known for high activity and optimism; they established new social and cultural norms in the post-war period.
Generation X	1967–1984	41–58	Noted for independence and skepticism toward traditional authorities amid economic instability.
Generation Y (Millennials)	1984–2000	25–41	Technology- and diversity-oriented; actively support social change and environmental sustainability.
Generation Z (Zoomers)	2000–2011	14–25	Distinct for digital literacy and activism, with a flexible approach to identity.
Generation Alpha (Gen A)	2011–...	14 and younger	Growing up fully immersed in a digital environment, which significantly shapes their worldview and tech skills.

Source: compiled by the author based on RBC materials. URL: https://trends.rbc.ru/trends/education/6156efb59a79477bf9ca5893?from=copy (accessed on 23.03.2025).

opment of a megacity are typically multi-objective and intended to satisfy the needs of various stakeholder groups within the urban environment (authorities, different social groups, industrial enterprises and organizations, etc.).

The complexity of addressing these tasks stems from conflicts arising due to the differing goals of the participants involved in the city's transport infrastructure. Additionally, there is a broad range of both external and internal economic. Environ-

Table 4

Influencing Factors and Their Significance in the Interaction Between the Public and Government Authorities for the Development of Moscow's Transport System

№	Influencing factor	Degree of significance of factors influencing the interaction between the public and government authorities in the metropolis
1.	Safety and reliability of transport vehicles	3.75
2.	Financial expenses (fare cost, related expenses)	3.61
3.	Travel speed	3.61
4.	Level of development of transport infrastructure (roads, bypasses)	3.55
5.	Accessibility, comfort, and convenience of transport usage	3.53
6.	Qualification level of transport industry workers	3.43
7.	Openness /accessibility of information for decision-making on transport/ route choice	3.38
8.	Environmental situation	3.36
9.	Level of communication between transport management authorities and the public	3.25
10.	Regulatory and legal framework for the transport sector	3.22
11.	Level of digitalization of the transport sector	3.22
12.	Level of development of supporting infrastructure	3.21
13.	Personal experience of use, recommendations from acquaintances	3.11

Source: compiled by the author based on the results of a survey of the population of a metropolis.

mental, social, technological, organizational, and political factors, many of which involve a certain degree of uncertainty and risk.

RESEARCH RESULTS

The results of the sociological survey conducted by the author among the population of the Moscow agglomeration showed that the metro was the most popular mode of transport, chosen by 55% of respondents. The use of bicycles and scooters was more common among young people aged 14 to 25 than other age groups.

To assess the importance of each of the factors listed above for the respondents, they were ranked by degree of significance, where 5 represents the most significant factor and 1 the least significant (see *Table 4*).

The data in *Table 4* indicate that the most important factors for city residents are the safety and reliability of transport vehicles, financial expenses (fare cost and related expenses), travel speed, the level of development of transport infrastructure, and the accessibility, comfort, and convenience of transport usage.

To identify the relationships and levels of influence of these factors on management decision-making in the transport sector, a correlation analysis was conducted. The results are presented in *Table 5*.

As part of the study, a correlation analysis was conducted on the factors influencing the interaction between government authorities and the public in the field of urban transport (see *Table 6*).

In particular, a strong correlation was found between the high cost of owning private transport (F1) and the use of transport infrastructure (F3), as well as the low availability of infrastructure for electric vehicles (F2). This situation can lead to financial difficulties for private vehicle owners when using their transport.

This reflects a key contradiction and problem in the sector: on one hand, increasing expenses related to owning private transport; on the other, difficulties in switching to more economical personal transportation options due to insufficient convenient infrastructure.

It may also be important to consider the lack of adequate public information as one of the key barriers slowing down the adoption of more economical and environmentally friendly types of urban transport.

The correlation significance of the following factors — accessibility, comfort, and convenience of transport use (F5), travel speed (F7), and safety and reliability of transport vehicles (F8) — reflects specific consumer priorities among the population in this area. Essentially, these represent the minimally acceptable conditions that must be met for the further development of urban transport. It is worth noting that no significant correlation was found between these factors and the aforementioned cost-related factors.

It should be emphasized that the impact of price (as an economic factor) is particularly noticeable — according to the survey, it ranks as the second most important factor. However, no correlations were found between financial expenditures and other factors.

This may indicate satisfaction with the current pricing level and pricing policy of transport services in the capital.

Correlations between regulatory governance of transport (F14) and the level of communication between transport management authorities and the population (F15) are justified by the importance of the first factor for the effectiveness of the second, highlighting the recognized need for significant refinement of the regulatory framework to establish effective communication between Moscow's government bodies and its residents.

The identified significance of openness and accessibility of information about the transport sector corresponds with the population's demonstrated interest in obtaining information not only about its development but also about the qualifications of sector employees. This is confirmed by correlations among factors such as the level of development of transport infrastructure

Table 5

Ordinal Numbers of Factors Influencing the Development of the Megacity's Transport System

Sequence number of the influencing factor	Name of the factor
F1	High cost of owning private transport (taxes, maintenance, repair, insurance, depreciation, fuel, etc.)
F2	Low availability of infrastructure for private transport use (parking, gas stations, EV charging)
F3	High cost of using transport infrastructure (toll roads, parking, etc.)
F4	Financial expenses (fare cost, related expenses)
F5	Accessibility, comfort, and convenience of transport usage
F6	Level of digitalization in the transport sector
F7	Travel speed
F8	Safety and reliability of transport vehicles
F9	Environmental situation
F10	Personal experience of use, recommendations from acquaintances
F11	Level of development of transport infrastructure (roads, bypasses)
F12	Level of development of related infrastructure (parking. cafes)
F13	Openness/availability of information for making decisions about transport/route choice
F14	Level of qualification of transport sector workers
F15	Regulatory and legal framework of the transport sector
F16	Level of communication between transport management authorities and the public

Source: compiled by the author based on the results of sociological surveys of the population of the Moscow metropolis

(F11), openness/accessibility of information (F12), and the qualification level of transport sector employees (F13).

This approach can be utilized within the public administration system. Reference [21] proposes enhancing the interaction between municipal authorities and the population in addressing urban management tasks based on program-targeted management, which implies linking planned activities to financial resources, targeting initiatives, and assessing cost-effectiveness.

Examples of partnership programs and projects involving government authorities, businesses, and the public in the transportation sector of the

Table 6

Results of Correlation Analysis of Factors Affecting the Interaction Between Government Authorities and the Public in Urban Transport

Correlation level of factors influencing the interaction between government authorities and the public in the field of urban transport																
Influencing factor	**F1**	**F2**	**F3**	**F4**	**F5**	**F6**	**F7**	**F8**	**F9**	**F10**	**F11**	**F12**	**F13**	**F14**	**F15**	**F16**
F1	1	0.57	0.657	0.422	0.215	0.141	0.189	0.224	0.145	0.084	0.243	0.293	0.27	0.219	0.198	0.198
F2	0.57	1	0.676	0.299	0.242	0.192	0.227	0.24	0.233	0.198	0.304	0.381	0.279	0.206	0.286	0.262
F3	0.657	0.676	1	0.392	0.194	0.208	0.226	0.25	0.24	0.167	0.277	0.328	0.236	0.227	0.201	0.183
F4	0.422	0.299	0.392	1	0.346	0.235	0.286	0.302	0.133	0.143	0.246	0.216	0.351	0.251	0.215	0.287
F5	0.215	0.242	0.194	0.346	1	0.356	0.542	0.528	0.354	0.381	0.539	0.29	0.468	0.446	0.423	0.364
F6	0.141	0.192	0.208	0.235	0.356	1	0.364	0.371	0.365	0.363	0.361	0.448	0.387	0.41	0.385	0.37
F7	0.189	0.227	0.226	0.286	0.542	0.364	1	0.564	0.269	0.399	0.483	0.328	0.391	0.428	0.359	0.361
F8	0.224	0.24	0.25	0.302	0.528	0.371	0.564	1	0.354	0.409	0.571	0.293	0.477	0.466	0.413	0.388
F9	0.145	0.233	0.24	0.133	0.354	0.365	0.269	0.354	1	0.345	0.338	0.256	0.332	0.386	0.338	0.299
F10	0.084	0.198	0.167	0.143	0.381	0.363	0.399	0.409	0.345	1	0.456	0.392	0.359	0.448	0.376	0.367
F11	0.243	0.304	0.277	0.246	0.539	0.361	0.483	0.571	0.338	0.456	1	0.434	0.605	0.523	0.497	0.434
F12	0.293	0.381	0.328	0.216	0.29	0.448	0.328	0.293	0.256	0.392	0.434	1	0.457	0.414	0.373	0.41
F13	0.27	0.279	0.236	0.351	0.468	0.387	0.391	0.477	0.332	0.359	0.605	0.457	1	0.518	0.494	0.391
F14	0.219	0.206	0.227	0.251	0.446	0.41	0.428	0.466	0.386	0.448	0.523	0.414	0.518	1	0.645	0.636
F15	0.198	0.286	0.201	0.215	0.423	0.385	0.359	0.413	0.338	0.376	0.497	0.373	0.494	0.645	1	0.63
F16	0.198	0.262	0.183	0.287	0.364	0.37	0.361	0.388	0.299	0.367	0.434	0.41	0.391	0.636	0.63	1

Source: compiled by the author based on the results of sociological surveys of the population of the Moscow metropolis.

Moscow metropolis include the Moscow Transport Innovations Fund (established jointly with JSC "ROSNANO," which invests in promising transport projects to support high-potential technological products), and the Moscow Transport Innovations initiative, which supports startups within the capital's transport complex.

CONCLUSIONS

During the study, factors influencing the interaction between the population and government authorities in the transportation sector of Moscow were identified and structured. This will further enable:

- the development of tools for monitoring the implementation of the "Strategy for the Development of the Transport System of Moscow and the Moscow Region until 2035";
- the creation of models for interaction between government authorities and the population in this sector;
- the application of the proposed approach in tasks requiring modeling to justify and make management decisions, including at the municipal level for the modernization of urban agglomeration facilities taking into account citizens' opinions [22].

Moreover, the approach presented in this article allows for the development of strategic guidelines for the future development of the metropolis's transport complex.

The following conclusions were drawn from the study:

1. The environmental factor is one of the most pressing issues at the current stage of interaction between the population and government authorities. Residents express interest in eco-oriented types of transport (including personal transport), but the lack of sufficient information is one of the key obstacles to their development.

2. Consumers prioritize accessibility, comfort, and convenience of transport use, travel speed, safety, and reliability of vehicles. Ensuring these conditions forms the foundation for effective interaction among all interested groups in this sector.

3. Successful interaction between government authorities and the population in the transport sector requires the development of a normative-legal framework governing its functioning.

4. Establishing effective forms of such interaction contributes to improving the quality of life standards for urban residents.

The results of this study can be used to improve the system for monitoring urban management development at the municipal level [23].

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